DOCUMENT RESUME

ED 475 761 TM 034 882

AUTHOR	Noble, Julie
TITLE	The Effects of Using ACT Composite Score and High School Average on College Admission Decisions for Racial/Ethnic Groups. ACT Research Report Series.
INSTITUTION	American Coll. Testing Program, Iowa City, IA.
REPORT NO	ACT-RR-2003-1
PUB DATE	2003-03-00
NOTE	37p.
AVAILABLE FROM	ACT Research Report Series, P.O. Box 168, Iowa City, IA 52243-0168. Tel: 319-337-1028. Web site: http://www.act.org
PUB TYPE	Reports - Research (143)
EDRS PRICE	EDRS Price MF01/PC02 Plus Postage.
DESCRIPTORS	*Academic Achievement; Access to Education; Black Students; College Admission; College Entrance Examinations; *College Students; *Grade Point Average; *Grade Prediction; Higher Education; Hispanic American Students; *Scores
IDENTIFIERS	*ACT Assessment

ABSTRACT

This study examined the effects of using ACT Composite scores and high school averages in making college admission decisions for students from selected racial/ethnic groups. The analyses were based on 2 samples: an African American/Caucasian sample of 262,553 students from 43 postsecondary institutions and a Hispanic/Caucasian American sample of 174,890 students from 25 institutions. In addition, the effect of adding other variables on the access rates of African American and Hispanic students was studied. African American and Hispanic students with a given high school average typically had a much lower probability of success than did Caucasian students with the same high school average. The corresponding differences in the probability of success, given ACT Composite score, were similar in direction but smaller in magnitude. This, total-group predictions based on either high school average or ACT Composite score were found to overestimate the first-year performance of African American and Hispanic students relative to that of Caucasian American students. ACT scores and high school averages were slightly more accurate for predicting first-year success of African American students than of Caucasian American students. The opposite result was true for Hispanic students. Moreover, smaller percentages of African American and Hispanic students than Caucasian American students achieve benchmark values of high school average, ACT Composite score, or a predictive index based on ACT Composite score and high school average jointly. (Contains 7 tables, 4 figures, and 32 references.) (Author/SLD)

Reproductions supplied by EDRS are the best that can be made
from the original document.

ACT Research Report Series 2003-1

ED 475 761

The Effects of Using ACT Composite Score and High School Average on College Admission Decisions for Racial/Ethnic Groups

Julie Noble

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

P. Farrant

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

1

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

TM034882

BEST COPY AVAILABLE

ACT

March 2003

For additional copies write:
ACT Research Report Series
P.O. Box 168
Iowa City, Iowa 52243-0168

© 2003 by ACT, Inc. All rights reserved.

The Effects of Using ACT Composite Score and High School Average on College Admission Decisions for Racial/Ethnic Groups

Julie Noble

Abstract

This study examined the effects of using ACT Composite scores and/or high school averages in making college admission decisions for students from selected racial/ethnic groups. The analyses were based on two samples: The African American/Caucasian American sample consisted of 262,553 students from 43 postsecondary institutions, and the Hispanic/Caucasian American sample consisted of 174,890 students from 25 institutions. In addition, the effect of adding other variables on the access rates of African American and Hispanic students was studied.

African American and Hispanic students with a given high school average typically had a much lower probability of success than did Caucasian students with the same high school average. The corresponding differences in the probability of success, given ACT Composite score, were similar in direction but smaller in magnitude. Thus, total-group predictions based on either high school average or ACT Composite score were found to overestimate the first-year performance of African American and Hispanic students, relative to that of Caucasian American students.

ACT scores and high school averages were slightly more accurate for predicting first-year success of African American students than of Caucasian American students. The opposite result was true for Hispanic students. Moreover, smaller percentages of African American and Hispanic students than Caucasian American students achieve most benchmark values of high school average, ACT Composite score, or a predictive index based on ACT Composite score and high school average jointly.

Acknowledgments

The author would like to thank Jill Crouse and Richard Sawyer for their helpful contributions to the methods used in this report.

The Effects of Using ACT Composite Score and High School Average on College Admission Decisions for Racial/Ethnic Groups

With the elimination of racial preference in admissions policies in Texas, Florida, California, and Washington, and the legal challenge to the University of Michigan being heard in the U.S. Supreme Court for its use of racial preferences in college admissions, many other institutions are considering eliminating race-based admissions policies (Orfield & Miller, 1998; Schmidt, 1998; 1999). Some institutions are basing their admissions policies primarily on high school rank or grades, with test scores and other information as secondary sources. Other institutions have reduced the use of standardized tests, but have not eliminated them entirely. Most are maintaining their current practices, but with great concern about the future of their admissions policies, particularly if their policies consider race/ethnicity.

Some people believe that standardized college admissions tests are "biased" or unfair, because African American and Hispanic students typically score lower on them than do Caucasian American or Asian American students (e.g., Cloud, 1997; Cortez, 1997; Cross & Slater, 1997; Hebel, 1999; St. John, Simmons, & Musoba, 1999; Marklein, 2000). What appears to be forgotten, however, is that African American and Hispanic students typically score lower on most achievement measures used for admissions, including high school average. Using almost any measure of academic achievement for college admissions will therefore result in a smaller proportion of African American and Hispanic students being admitted, relative to Caucasian and Asian American students (D'Souza, 1995; Orfield & Miller, 1998; Zwick, 1999).

The issue of test score "bias" in college admissions has been extensively researched from the perspective of success in college. When the relationships between college grades, test scores, and high school grades differ among various population subgroups of students, using a prediction equation developed from the total group of students may result in systematic over- or

underprediction for different subgroups, i.e., differential prediction. Prior research on differential prediction using admissions test scores (typically ACT Assessment or SAT scores) and high school grades as predictors (e.g., Breland, 1979; Donlon, 1984; Linn, 1978; 1982; Pennock-Roman, 1988; 1990; Sawyer, 1985) has shown that the first-year GPAs of African American and Hispanic students with given test scores are lower than the GPAs of Caucasian American students with the same test scores. In addition, African American students tend to have lower college English or algebra grades than Caucasian American students with the same high school grades (Noble, Crouse, & Schulz; 1996; J. Crouse, personal communication, 9/19/00). Moreover, the differences in college outcomes between African American and Caucasian American students with the same high school grades were larger than those based on students with the same ACT scores.

Some people believe that by reducing or eliminating the use of standardized tests and reverting to measures such as high school rank or grade average, the resulting proportions of ethnic minorities admitted might approach the proportions achieved using race-based admissions policies (which may or may not be optimal, depending on the goals of the institution). But at what cost? Because of large disparities between high schools in their grading practices and the rigor of their courses, a high-ranking or high GPA student from one school could differ substantially from a high-ranking or high GPA student from another institution in his/her preparedness for college-level work. Even within schools, students' high school ranks or grade averages do not reflect the rigor of the courses students take. The potential result is that students who appear to be prepared for college, but who are actually underprepared, could have much smaller chances of achieving good grades and persisting to graduation. Conversely, students from high-quality schools with lower high school ranks or grade averages who are actually

prepared for college are less likely to be admitted (D'Souza, 1995; Krauthammer, 1998; Orfield & Miller, 1998; Selingo, 2000; Stewart, 1998). Though these outcomes have been noted in California and Florida (e.g., Selingo, 2000), the University of Texas-Austin (Lavergne and Walker, 2001), unlike other Texas institutions, has had nearly the same percentage of minority students enroll in recent years that they had prior to ending affirmative action programs in 1996. However, minority enrollments at the university are still below the levels of enrollment achieved prior to the 1996 Hopwood vs. Texas decision.

Consider the purposes and uses of tests and their utility relative to other achievement measures (e.g., high school average). The ACT Assessment measures academic skills and knowledge that are taught in typical college-preparatory curricula in high school, and is intended to facilitate both college admissions and course placement decisions. If ACT scores are valid for their intended uses, students taking rigorous college-preparatory course work in high school will obtain higher ACT scores than those who do not, and students with higher ACT scores will be more successful their first year in college than students with lower test scores. Standardized admissions tests like the ACT Assessment will reflect differences in the educational preparation of high school students, in particular the courses they take, the grades they earn, their high school ranking, and the quality of the education they receive (Zwick, 1999).

Prior research on admissions test scores focused primarily on the issue of differential prediction. Moreover, few of these studies have examined other differential *effects* (e.g., the percentage of students who would be admitted) of using admissions test scores or high school average for college admissions. The purpose of this study, therefore, was to investigate the differential effects on African American, Hispanic, and Caucasian American students of using ACT Composite scores and/or high school averages for making non-race-based admissions

decisions. Using hypothetical cutoffs based on optimal predictions of success, prediction accuracy and the percentages of students admitted (access rates) were compared across subgroups and predictor variables. In addition, this study investigated the relative contribution of other student information to improving access rates for African American and Hispanic students.

Data

The data for this study were taken from the ACT Prediction Research (ACT, 1997) file for the 1996-97 freshman class. The file consisted of the background characteristics, high school grades, ACT scores, and college grades for 219,954 first-year students from 311 colleges. These students had enrolled in an institution and completed their first year. In addition, 728,957 nonenrolled students were identified from the 1996-97 ACT Class Profile (ACT, 1997) history, a database consisting of enrollment information and ACT Assessment records of enrolled and nonenrolled students from over 900 institutions. Nonenrolled students had requested that their ACT scores be sent to at least one of the 311 institutions, but they did not enroll in that institution. These students, plus those who actually enrolled in an institution, comprised the applicant pool for that institution.

The applicant pools for the institutions in this study approximate actual applicant pools, but are not true applicant pools. Students may send their ACT scores to any number of institutions, but actually apply to a subset of them. Conversely, some students may apply to some institutions without submitting official ACT score reports. Future research based on actual application and enrollment information will help identify the effects of approximating the applicant pools used in this study.

The ACT Assessment consists of four academic tests (in English, Mathematics, Reading, and Science Reasoning, a Student Profile Section, an Interest Inventory, and the Course Grade

Information Section (CGIS). Students receive scores on each test, as well as a Composite score, which is the arithmetic average of the four academic test scores. Test scores are reported on a scale of 1 to 36. The CGIS collects information about students' grades in 30 specific high school courses. Self-reported grades collected by the CGIS have been found accurate, relative to information provided on students' transcripts (Sawyer, Laing, & Houston, 1988).

The applicant pool for each institution was limited to students with ACT Composite scores and high school averages (and first-year GPAs for enrolled students). A minimum sample size of 40 enrolled students per racial/ethnic group was used to help insure accurate and stable predictions. Of the original files, 71 institutions (comprising 94,786 enrolled students and 325,821 nonenrolled students) had at least 40 enrolled Caucasian American and 40 enrolled African American students. In addition, 30 institutions (comprising 66,479 enrolled students and 209,761 nonenrolled students) had at least 40 enrolled Caucasian American and 40 enrolled Hispanic students. The Hispanic student group included Mexican American, Chicano, Puerto Rican, Cuban, and other Hispanic students. All students had taken the ACT Assessment within two years of enrolling in college, and all students at each institution who met the criteria for inclusion were included, regardless of race/ethnicity.

The institutions used in this study were primarily from southern, south central, and midwestern states, and do not represent postsecondary institutions nationally. They also varied in admissions selectivity, though the majority (60%) had traditional (top 50% of the high school graduating class) or selective (top 25% of the high school graduating class) admissions policies.

The primary variables used in this study included the ACT Composite score, high school average (HSAV) based on self-reported high school grades, and first-year college grade average

(GPA). Other variables from the Student Profile Section were examined for their contribution to ACT score and/or HSAV access rates and prediction accuracy. These variables included:

1. Student-reported number of high school courses taken in English, mathematics, social studies, and natural sciences (score ranges: 1-4, 1-7, 1-7, 1-4)
2. Eight accomplishment scores (leadership, music, speech, writing, science, athletics, community service, work experience; score range: 1-9)
3. Reported participation in 18 specific extracurricular activities and total number of high school extracurricular activities (score range: 1-18)
4. Reported planned participation in 18 extracurricular activities in college and total number of college extracurricular activities planned (score range: 1-18)
5. Family income (score range: Less than $18,000 to More than $100,000; coded 0-9)
6. Characteristics of high school attended (location (rural, urban, suburban), per-grade enrollment, public/private)
7. English as first language spoken in the home (score range: 0-1)
8. Student-reported needs for help with educational plans, reading comprehension, mathematics skills, writing, study skills (score range: 0-1)
9. Satisfaction with components of high school (score range: 1-4)
10. Overall satisfaction with high school (score range: 1-5)
11. Enrollment in a college preparatory curriculum (score range: 0-1)
12. Expected college GPA range (score range: 0.5-0.9 to 3.5-4.0; coded 1-7)
13. Certainty of college major (score range: very sure to not sure; coded 1-3)
14. Certainty of occupational choice (score range: very sure to not sure; coded 1-3)
15. Highest level of education planned (score range: Other to Professional Degree; coded 0-5)

High school characteristics were also obtained by matching ACT student records to a file developed by Market Data Retrieval (MDR), Inc.

Method

To maximize sample size, analyses were carried out separately for the African American/Caucasian American sample and for the Hispanic/Caucasian American sample. The same analyses were conducted for both samples.

Descriptive Statistics

For each racial/ethnic group and for the total group, mean ACT Composite scores, high school average (HSAV) values, and first-year GPAs (enrolled students only) were computed by institution. Descriptive statistics for each institution were calculated for students who completed the

first year of college (enrolled students), as well as for the entire applicant pool (enrolled and nonenrolled students combined). Distributions of these statistics were then summarized across institutions for the total group and for each racial/ethnic group using minimum, median, and maximum values.

Logistic Regression

Initially, two logistic regression models were developed for each institution for predicting three first-year success outcomes (GPA of 2.0 or higher, GPA of 2.5 or higher, GPA of 3.0 or higher):

1. Total-group regression model, consisting of a single prediction equation for both racial/ethnic groups. The predictors were ACT Composite score, HSAV, or ACT Composite score and HSAV used jointly.

2. Within-group model, consisting of separate prediction equations for each racial/ethnic group.

For reasons explained later in this paper, only the results for the 2.5 or higher GPA success criterion are reported.

Probabilities of obtaining each outcome were estimated using the within-group ACT Composite, HSAV, and joint predictor models. The regression weights from each model were then used to estimated probabilities of success for all students in the applicant pool, by racial/ethnic group. These probabilities were summarized across institutions by model and racial/ethnic group using median, minimum, and maximum values. Median values were then plotted by racial/ethnic group.

For each institution, "optimal cutoffs" based on the three total-group regression models were identified. Optimal cutoffs correspond to a .50 probability of success for a given model, and maximize the estimated percentage of correct selection decisions (see Sawyer, 1996). For the two-

predictor model, combinations of ACT Composite and HSAV cutoffs corresponding to a probability of success of .50 were identified.

It should be noted that optimal cutoffs are used here only as benchmarks to compare access rates associated with different selection variables. They do not consider other factors that might be of interest to postsecondary institutions. Actual access rates depend on the admissions policies of individual institutions, and likely differ substantially from the results reported here. More importantly, admissions decisions are usually made based on multiple variables and multiple cutoffs or cutoff ranges. ACT does not advocate making admissions decisions solely based on a single cutoff or a single measure; the use of single cutoffs in this paper is a mathematical simplification. The methods used here, such as those used with the joint ACT and HSAV model may be generalized to multiple measures.

Using the probabilities of success estimated using the within-ethnic group regression models and the total-group optimal cutoffs, the following statistics were estimated for each model using the applicant pool for each institution:

1. the percentage of students who would be admitted (access rate),
2. the percentage of correct admission decisions (accuracy rate (AR)),
3. the increase in the percentage of correct admission decisions over admitting all applicants (increase in accuracy rate (ΔAR)), and
4. the percentage of successful students among those who would be admitted (success rate (SR)).

Correct admission decisions include students who would be admitted who were successful and students who would not be admitted who would have not been successful, had they been admitted (Sawyer, 1996).

Contribution of Other Variables

For each sample, simple correlations were calculated between all additional variables and first-year GPA. Variables that correlated at least .10 in magnitude with first-year GPA and that were statistically significant ($p < .001$) were included in additional analyses. Correlations were also calculated by racial/ethnic group to identify potential predictors that were relevant to one, but not the other, racial/ethnic group.

The logistic regression analyses described above using total-group cutoffs and within-group models were repeated, but with the additional variables. Two- and three-predictor models were first developed, consisting of ACT Composite score or HSAV and a new variable, or ACT Composite score, HSAV, and the new variable. Variables that reduced the difference between racial/ethnic groups in median percentage admitted were included in more complex models (three-, four-, and five-predictor models).

Based on statistical and practical considerations, the analyses were limited to a success criterion of a 2.5 or higher GPA. Possibly due to student attrition or grade inflation, a relatively small proportion of students achieve GPAs of less than 2.0 at many institutions (e.g., the national average first-year GPA for enrolled freshmen was 3.23 (ACT, 1998)). In order to achieve reasonable predictions of first-year GPA, there must be a sufficient number of students with GPAs above and below a given GPA threshold. For these samples, few African-American students had GPAs above 3.0 and few Hispanic students and Caucasian-American students had GPAs below 2.0. Moreover, for some institutions and predictor variables, probabilities of success either all exceeded .50 or were all less than .50. In addition, some institutions showed negative predictor/GPA relationships, often due to restriction of range in either the predictor or in GPAs, or to GPAs that measured factors other than educational achievement (e.g., attendance, effort, participation). All

institutions where these situations occurred were eliminated from the logistic regression analyses. A "2.5 or higher" success definition was therefore selected to maximize the number of institutions in both samples for which models could be developed. The final samples upon which all results were based consisted of 262,553 students from 43 institutions for the African-American/Caucasian-American sample and 174,890 students from 25 institutions for the Hispanic/Caucasian-American sample.

Results

Descriptive Statistics

African American/Caucasian American Students. The descriptive statistics are summarized in Table 1. For both enrolled students and the applicant pool, median, minimum, and maximum numbers of students, mean ACT Composite score, mean HSAV values, and mean first-year GPA (enrolled students only) are reported for the total-group and by racial/ethnic group.

In general, enrolled students had higher ACT Composite scores and slightly higher HSAVs than did the entire applicant pool (ACT median mean = 21.3 vs. 20.3; HSAV median mean = 3.15 vs. 3.06). As one would expect, median standard deviations for the enrolled students were somewhat smaller than were those for the entire applicant pool (ACT median SD = 3.90 vs. 4.03; HSAV median SD =.57 vs. .59).

For both the enrolled group and the applicant pool, African American students typically had lower mean ACT Composite scores and HSAV values than did Caucasian American students. African American students also had lower mean first-year GPAs than did Caucasian American students (median GPA = 2.54 vs. 2.06). Moreover, African American students tended to vary less in their ACT Composite scores and HSAVs than did Caucasian American students, as shown by the median standard deviations for both groups.

TABLE 1

Distributions, Across Institutions, of Means and Standard Deviations of ACT Composite Scores, High School Averages, and First-Year GPAs of Caucasian American and African American Students, by Applicant/Enrollment Status (43 institutions)

Applicant/ enrollment status	Racial/ ethnic group	N		ACT Composite score				HSAV				First-year GPA			
				Mean		SD		Mean		SD		Mean		SD	
		Med	Min/ max	Med	Min/ max	Med	Min/ max	Med	Min/ max	Med	Min/ max	Med	Min/ max	Med	Min/ max
Enrolled students	Total group[1]	1228	188/ 3793	21.3	17.4/ 24.2	3.90	3.28/ 4.38	3.15	2.66/ 3.49	.57	.42/ .69	2.47	2.09/ 2.90	.93	.69/ 1.39
	Caucasian Am.	1111	89/ 3474	21.6	18.9/ 24.5	3.77	3.20/ 4.29	3.16	2.79/ 3.52	.56	.41/ .70	2.54	2.19/ 3.16	.93	.68/ 1.39
	African Am.	129	47/ 941	17.8	14.9/ 20.7	3.10	2.25/ 4.13	2.93	2.50/ 3.30	.52	.41/ .65	2.06	1.58/ 2.66	.89	.67/ 1.28
Applicant pool[2]	Total group	5076	517/ 18301	20.3	17.3/ 22.7	4.03	3.49/ 4.46	3.06	2.65/ 3.29	.59	.50/ .64				
	Caucasian Am.	4192	301/ 16931	20.9	18.5/ 22.9	3.93	3.50/ 4.33	3.09	2.73/ 3.31	.58	.49/ .65				
	African Am.	620	84/ 1724	17.1	14.9/ 18.6	3.30	2.23/ 4.02	2.80	2.53/ 3.07	.56	.48/ .65				

[1] The total group includes all students from each institution with ACT Composite scores and HSAVs, regardless of race/ethnicity.
[2] The applicant pool includes both enrolled and nonenrolled students.

The median mean ACT Composite scores for both the enrolled group and the applicant pool in this study were slightly lower than the ACT Composite mean for first-year college students nationally (mean = 21.7; ACT, 1998). The median mean HSAV values were also lower than the corresponding HSAV values for ACT-tested college freshmen (mean = 3.23).

Hispanic/Caucasian American Students. The descriptive statistics are summarized in Table 2. For both enrolled students and the applicant pool, median, minimum, and maximum (across institutions) numbers of students, mean ACT Composite score, mean HSAV values, and mean first-year GPA (enrolled students only) are reported for the total group and for each racial/ethnic group.

In general, enrolled students had higher ACT Composite scores and somewhat higher HSAVs than did the entire applicant pool (ACT median mean = 21.8 vs. 20.1; HSAV median mean = 3.28 vs. 3.14). The median ACT Composite standard deviation was slightly higher for the applicant pool than for enrolled students, however (ACT median SD = 3.98 vs. 3.75).

For both the enrolled group and the applicant pool, Hispanic students typically had lower mean ACT Composite scores and HSAV values than did Caucasian American students. Hispanic students also typically had lower mean first-year GPAs than did Caucasian American students (median GPA = 2.66 vs. 2.43).

The median mean ACT Composite score and HSAV for the enrolled group were comparable to those for first-year college students nationally (mean ACT Composite = 21.7; mean HSAV = 3.23; ACT, 1998). The median means for the applicant pool were slightly lower.

TABLE 2

Distributions, Across Institutions, of Means and Standard Deviations of ACT Composite Scores, High School Averages, and First-Year GPAs of Caucasian American and Hispanic Students, by Applicant/Enrollment Status
(25 institutions)

Applicant/ enrollment status	Racial/ ethnic group	N		ACT Composite score				HSAV				First-year GPA			
				Mean		SD		Mean		SD		Mean		SD	
		Med	Min/ max	Med	Min/ max	Med	Min/ max	Med	Min/ max	Med	Min/ max	Med	Min/ max	Med	Min/ max
Enrolled students	Total group[1]	1153	193/ 3556	21.8	17.2/ 26.8	3.75	3.18/ 4.58	3.28	2.69/ 3.75	.50	.29/ .62	2.66	2.02/ 3.21	.89	.64/ 1.06
	Caucasian Am.	944	53/ 3474	22.1	18.9/ 26.9	3.73	3.21/ 4.52	3.28	2.70/ 3.76	.50	.28/ .61	2.66	2.19/ 3.21	.90	.63/ 1.11
	Hispanic	76	41/ 1156	20.1	15.7/ 23.9	3.67	2.39/ 4.59	3.18	2.54/ 3.55	.51	.39/ .70	2.43	2.01/ 2.90	.94	.62/ 1.22
Applicant pool[2]	Total group	6099	619/ 17247	21.1	16.7/ 23.9	3.98	3.23/ 4.48	3.14	2.68/ 3.54	.54	.44/ .63				
	Caucasian Am.	5223	155/ 16931	21.4	18.5/ 24.0	3.97	3.50/ 4.45	3.18	2.68/ 3.55	.53	.44/ .63				
	Hispanic	340	82/ 2829	19.2	15.9/ 22.2	3.79	2.59/ 4.63	3.05	2.60/ 3.45	.55	.45/ .68				

[1] The total group includes all students from each institution with ACT Composite scores and HSAVs, regardless of race/ethnicity.
[2] The applicant pool includes both enrolled and nonenrolled students.

Logistic Regression

African American/Caucasian American Students. Table 3 contains the total-group and within-racial/ethnic group results for the ACT Composite, HSAV, and joint ACT Composite and HSAV models. Median, minimum, and maximum optimal cutoffs, estimated accuracy rates (AR), estimated increase in accuracy rate (ΔAR), estimated success rate (SR), and percentage of students who would be admitted are provided for each model. For the joint model, the .50 values in the optimal cutoff column represent the combinations of ACT Composite and HSAV cutoffs corresponding to a probability of success of .50.

TABLE 3

Distributions, Across Institutions, of Total and Within-Group Logistic Regression Statistics for African American and Caucasian American Students

Predictor variable	Racial/ ethnic group	Optimal cutoff		Est. accuracy rate		Est. increase in accuracy rate		Est. success rate		% Admitted	
		Med.	Min./ max.	Med.	Min./ max.	Med.	Min./ max.	Med.	Min./ max.	Med.	Min./ max.
ACT Composite	Total group	20	14/ 22	.67	.61/ .76	.14	.01/ .36	.66	.60/ .77	57	29/ 96
	Cauc. Am.	20	13/ 22	.66	.61/ .84	.09	.00/ .33	.66	.61/ .85	64	31/ 98
	African Am.	21	14/ 25	.72	.60/ .83	.42	.07/ .63	.58	.51/ .70	13	2/ 80
HSAV	Total group	2.95	1.69/ 3.43	.70	.63/ .74	.15	.00/ .33	.70	.62/ .76	58	33/ 96
	Cauc. Am.	2.90	1.40/ 3.38	.70	.63/ .83	.12	.00/ .30	.71	.63/ .83	63	40/ 99
	African Am.	3.37	1.79/ 3.96	.73	.59/ .84	.43	.00/ .65	.60	.51/ .72	15	1/ 93
ACT Composite & HSAV	Total group	.50	.50/ .50	.71	.61/ .77	.18	.04/ .39	.71	.61/ .80	51	31/ 80
	Cauc. Am.	.50	.50/ .50	.71	.63/ .84	.14	.01/ .36	.72	.65/ .85	58	33/ 95
	African Am.	.50	.50/ .50	.76	.65/ .87	.47	.10/ .68	.64	.58/ .76	17	4/ 60

For the total group, the ACT Composite model was slightly less accurate than the HSAV model (median AR = .67 vs. .70). However, the two-predictor model (ACT Composite and HSAV)

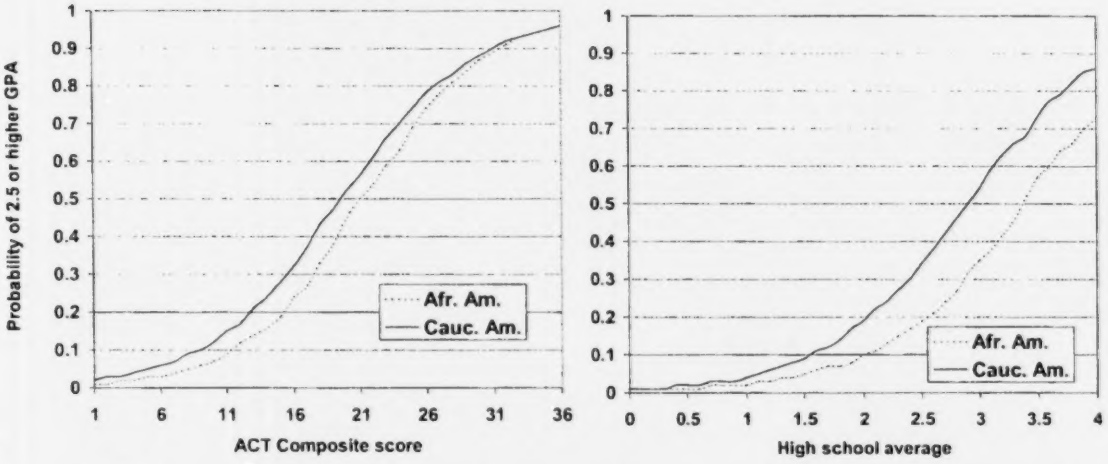
showed a higher median AR than either one-predictor model (median AR = .71). The corresponding median ΔARs indicates that using both ACT Composite and HSAV in making admissions decisions would typically increase the percentage of correct admissions by 18% over admitting all students. Median SRs were generally similar across models, ranging from .66 to .71 across the three models. The median percentages of students who would be admitted using the separate ACT Composite and HSAV models were comparable (57% and 58%). However, the median percentage admitted for the joint model was somewhat lower (51%).

For both the ACT Composite and HSAV within-group models, the median optimal cutoffs were higher for African American students that for Caucasian American students. Moreover, for all three models, the median ARs and ΔARs for African American students were generally higher than were those for Caucasian American students. In contrast, the median SRs for African American students were lower than were those for Caucasian American students for all three models. Differences between Caucasian American and African American students in median percentage who would be admitted were similar for the separate ACT Composite and HSAV models (ACT Composite = 64% vs. 13%; HSAV = 63% vs. 15%); the joint model reduced these differences slightly (median percentages admitted = 58% vs. 17%).

The results showing that the within-group median optimal ACT Composite and HSAV cutoffs were higher for African American students than for Caucasian American students is consistent with the research cited earlier showing that these variables overestimate the college performance of African American students, relative to Caucasian American students. To further investigate this issue, the within-group median probabilities of a GPA of 2.5 or higher at each ACT Composite score and/or HSAV were plotted for both racial/ethnic groups. The results are shown in Figures 1 and 2.

As shown in Figure 1, the largest differences in median probabilities of success between African American and Caucasian American students, based on ACT Composite score, occurred for scores between 10 and 25. For these scores, differences in median probabilities of success between these two groups ranged from .05 to .10, with African American students having the lower median probabilities.

FIGURE 1. **Median Within-Racial/Ethnic Group Probabilities of 2.5 or Higher First-Year GPA, Using ACT Composite Score or HSAV (Caucasian American and African American Students)**



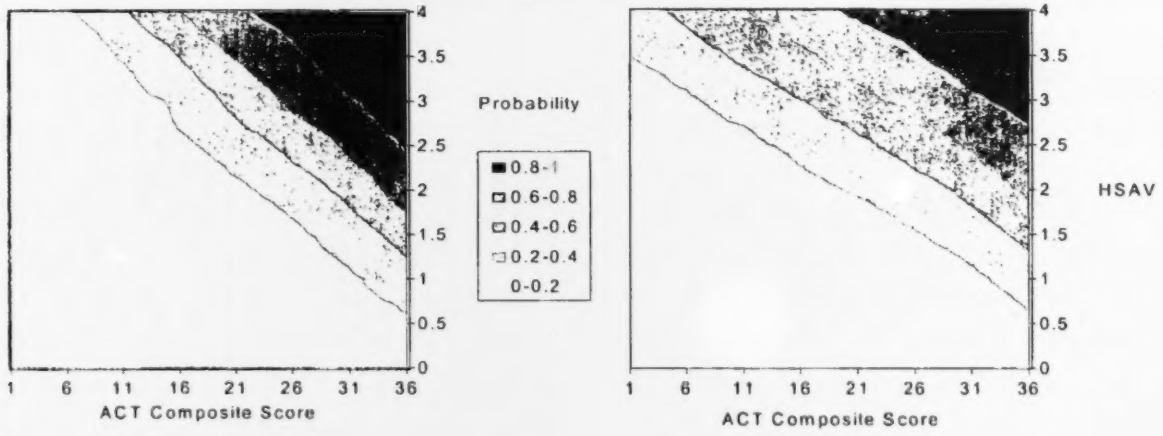
In comparison, differences in median probabilities of success between African American and Caucasian American students based on HSAV were generally larger than those based on ACT Composite score. At an HSAV of 1.5, the difference between racial/ethnic groups in median probability was .05, and increased to .22 at an HSAV of 3.5. The between-groups difference in median probability at an HSAV of 4.0 was .13.

For comparison purposes, separate ACT Composite and HSAV within-racial/ethnic group linear regression models were developed. Using the total-group median optimal ACT Composite cutoff score of 20, corresponding median (across institutions) predicted first-year GPAs were 2.35 and 2.23 for Caucasian American and African American students, respectively. Using the total

group median optimal HSAV of 2.95, the corresponding median predicted first-year GPAs were 2.38 and 2.05, respectively, reflecting the greater differences in outcomes for the two groups, when conditioned on HSAV.

Figure 2 includes two contour plots, one for African American students and one for Caucasian American students, illustrating the median probabilities of a GPA of 2.5 or higher based on within-group joint ACT Composite and HSAV models. This figure illustrates the benefit of using both ACT Composite scores and HSAV for making admissions decisions. For example, as shown earlier, African American students with an ACT Composite score of 21 or an HSAV of 3.37 typically would have a .50 probability of a 2.5 or higher first-year GPA. However, when both variables were considered, students with HSAVs as low as 2.5 would have a .50 probability of a 2.5 or higher GPA, if their ACT Composite scores were 21 or higher.

FIGURE 2. **Median Within-Group Probabilities of 2.5 or Higher First-Year GPA, Using ACT Composite Score and HSAV**



African American students Caucasian American students

Table 4 contains the logistic regression statistics for the ACT Composite score, HSAV, and joint ACT Composite/HSAV models, reflecting the effect of imposing the optimal total group cutoff for each institution on both groups (i.e., using the within-group probabilities and associated

estimated accuracy rates and other validity statistics). The results were then summarized across institutions. This approach illustrates the effect of using a common selection rule for the applicant pool based on total group optimal ACT Composite score and/or HSAV.

TABLE 4

Distributions, Across Institutions, of Within-Group Regression Statistics for African American and Caucasian American Students Using Total Group Optimal Cutoffs

Predictor variable	Group	Probability at total group cutoff		Est. accuracy rate		Est. increase in accuracy rate		Est. success rate		% Admitted	
		Med.	Min./ max.	Med.	Min./ max.	Med.	Min./ max.	Med.	Min/. max.	Med.	Min./ max.
ACT Composite	Cauc. Am.	.55	.49/ .68	.66	.60/ .84	.09	-.00/ .33	.68	.63/ .88	56	31/ 93
	Afr. Am.	.45	.29/ .68	.71	.58/ .82	.41	.08/ .62	.54	.45/ .79	18	5/ 70
HSAV	Cauc. Am.	.52	.50/ .61	.70	.62/ .83	.12	-.00/ .30	.72	.66/ .84	59	37/ 96
	Afr. Am.	.35	.17/ .49	.69	.59/ .80	.37	.00/ .57	.50	.36/ .64	37	14/ 96
ACT Comp. & HSAV	Cauc. Am.	.49	.43/ .59	.71	.63/ .83	.14	.01/ .36	.73	.66/ .87	55	36/ 89
	Afr. Am.	.37	.14/ .57	.74	.65/ .86	.45	.10/ .65	.58	.44/ .78	24	7/ 67

Median probabilities of success and success rates for African American students corresponding to the total-group optimal cutoff were lower than were those for Caucasian American students for all three predictor models. The between-groups difference in median probability was almost twice as large for HSAV (.35 vs. .52, respectively) as for the ACT Composite (.45 and .55, respectively). In contrast, median ARs were somewhat higher for African American students than for Caucasian American students for the ACT Composite and joint models. Similarly, median increases in the percentages of correct admissions decisions (ΔARs) were also higher for African American students than for Caucasian American students.

In general, a smaller percentage of African American students would be admitted under a total group cutoff, compared to Caucasian American students, if any of the three models were used. For the HSAV model, the median percentages of students who would be admitted were 37% and 59% for African American and Caucasian American students, respectively. For the ACT Composite model, the median percentages of students who would be admitted were 18% and 56%, respectively. For the joint model, the median percentages of students who would be admitted were 24% and 55%, respectively.

Hispanic/Caucasian American Students. Table 5 contains the total group and within-racial/ethnic group results for the ACT Composite, HSAV, and joint ACT Composite and HSAV models. Median, minimum, and maximum optimal cutoffs, estimated accuracy rates (ARs), estimated increases in accuracy rates (ΔARs), estimated success rates (SRs), and percentage who would be admitted are provided for each model.

As shown in Table 5, the total group median ARs and SRs for the ACT Composite and HSAV models were similar to those for the African American/Caucasian American sample, with the ACT Composite model having a slightly lower median AR than the HSAV model (median AR = .66 vs. .70). The median AR for the joint ACT Composite/HSAV model was smaller than that for the African American/Caucasian American sample, though it was still higher than the median AR from the one-predictor models. The ΔARs were also generally smaller for all three predictor models, compared to those for the African American/Caucasian American sample. The difference in the median percentage of students who would be admitted for the ACT Composite model was larger than that for the HSAV model (76% vs. 68%). For the joint model, the median percentage admitted (65%) was slightly smaller than that for the HSAV model.

TABLE 5

Distributions, Across Institutions, of Total and Within-Group Logistic Regression Statistics for Hispanic and Caucasian American Students (25 institutions)

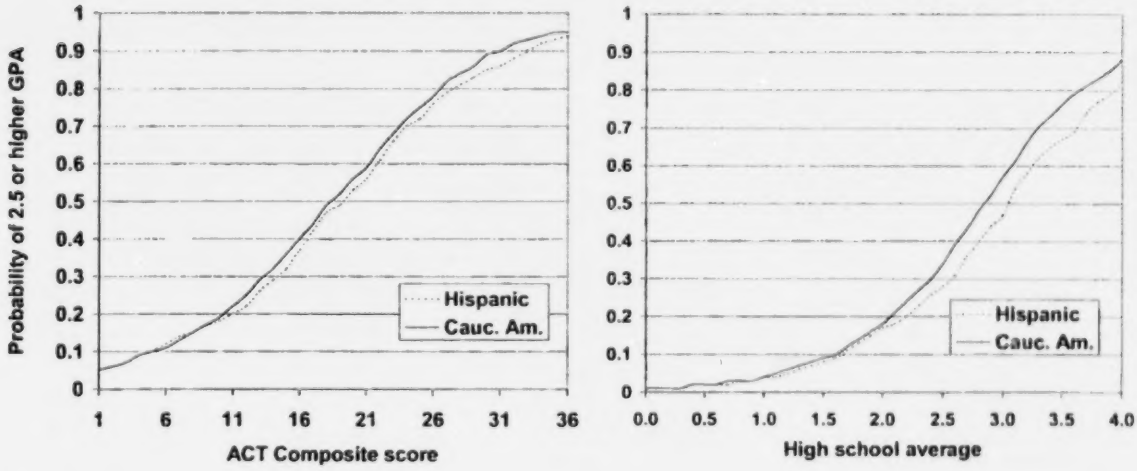
Predictor variable	Racial/ ethnic group	Optimal cutoff		Est. accuracy rate		Est. increase in accuracy rate		Est. success rate		% Admitted	
		Med.	Min./ max.	Med.	Min./ max.	Med.	Min./ max.	Med.	Min./ max.	Med.	Min./ max.
ACT Composite	Total group	18	12/ 22	.66	.59/ .81	.05	.00/ .42	.66	.59/ .81	76	13/ 100
	Cauc. Am.	18	12/ 21	.67	.59/ .84	.04	.00/ .23	.67	.59/ .85	79	41/ 100
	Hisp.	19	12/ 27	.64	.54/ .76	.14	.00/ .43	.61	.53/ .77	54	4/ 98
HSAV	Total group	2.87	1.66/ 3.60	.70	.63/ .83	.11	.01/ .40	.71	.59/ .85	68	17/ 97
	Cauc. Am.	2.85	1.40/ 3.38	.71	.63/ .83	.09	.00/ .28	.72	.63/ .85	69	44/ 99
	Hisp.	3.03	1.73/ 3.78	.67	.58/ .81	.17	.01/ .43	.67	.52/ .83	50	15/ 96
ACT Composite & HSAV	Total group	.50	.50/ .50	.71	.64/ .81	.13	.01/ .45	.72	.62/ .83	65	15/ 94
	Cauc. Am.	.50	.50/ .50	.72	.64/ .84	.12	.01/ .31	.73	.65/ .85	66	41/ 96
	Hisp.	.50	.50/ .50	.72	.60/ .83	.23	.02/ .47	.68	.56/ .84	48	14/ 91

For both the ACT Composite and HSAV within-group models, the median optimal cutoffs were higher for Hispanic students than for Caucasian American students (18 vs. 19, and 2.85 vs. 3.03, respectively). In contrast to the African American/Caucasian American results, the corresponding median ARs were slightly lower for Hispanic students than for Caucasian American students. No differences in median ARs between groups were found for the joint model. However, as was found earlier for African American students, the median ΔARs for Hispanic students were generally higher than were those for Caucasian American students for all three models, and the median SRs for Caucasian American students were higher than those for Hispanic students. Finally, the median percentages of students who would be admitted were

lower for Hispanic students than for Caucasian American students for all three models. Moreover, the difference in median percentage admitted between racial/ethnic groups was slightly larger for the ACT Composite model (79% vs. 54%) than for the HSAV model (69% vs. 50%). The joint model slightly reduced the difference in the median percentage of students who would be admitted found for the HSAV model (to 66% vs. 48%).

As was found for the African American/Caucasian American sample, for a given ACT Composite score or HSAV, Hispanic students typically had a slightly lower probability of obtaining a 2.5 or higher GPA, relative to Caucasian American students with the same score or HSAV. Figures 3 and 4 illustrate the within-group median probabilities of a GPA of 2.5 or higher at each ACT Composite score and/or HSAV for each racial/ethnic group.

FIGURE 3. **Median Within-Racial/Ethnic Group Probabilities of 2.5 or Higher First-Year GPA, Using ACT Composite Score or High School Average (Caucasian-American and Hispanic Students)**



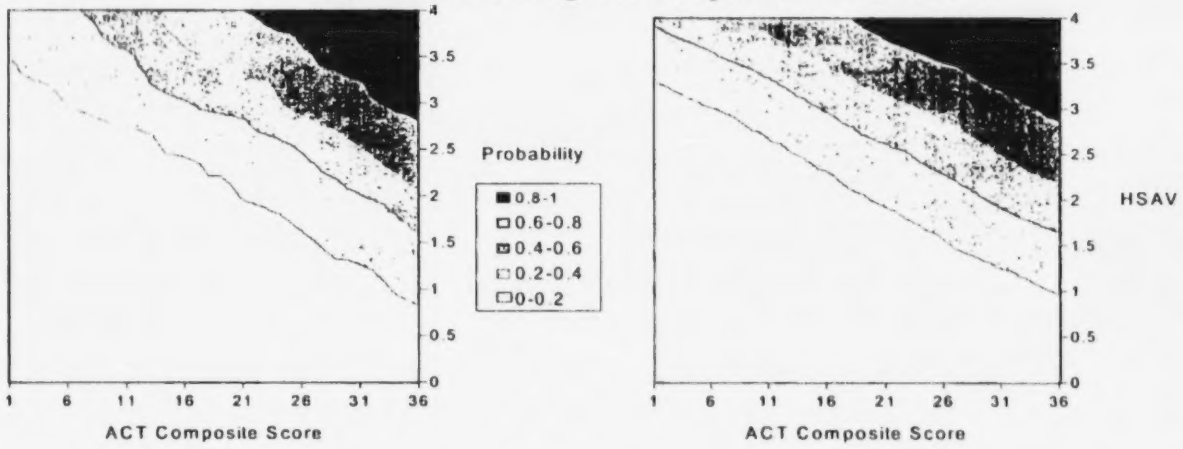
Differences in median probability of success between Hispanic and Caucasian American students, based on ACT Composite score, were small, with differences not exceeding .04 (see Figure 3). In comparison, differences in median probability between Hispanic and Caucasian American students based on HSAV were larger: From HSAV values of 2.5 to 4.0, differences in

median probability ranged from .06 to .10. For both models, differences in median probabilities were smaller for this sample than for the African American/Caucasian American sample.

Separate ACT Composite and HSAV within-group linear regression models were also developed for the Hispanic/Caucasian American sample. Using the total-group median optimal ACT Composite score of 18, the corresponding median (across institutions) predicted first-year GPAs were 2.30 for Caucasian American students and 2.16 for Hispanic students. Using the total group median optimal HSAV of 2.87, the corresponding median predicted first-year GPAs were 2.35 and 2.21, respectively.

Figure 4 shows the median probabilities of a first-year GPA of 2.5 or higher for Hispanic and Caucasian American students, based on the within-group joint ACT Composite and HSAV model. This figure shows the relative benefit of using a joint ACT Composite/HSAV model for making admissions decisions. Based on ACT Composite score alone, Hispanic students with a score of 19 would have a .50 probability of a GPA of 2.5 or higher. However, when HSAV was also considered, students with ACT Composite scores of less than 19 would have the same or higher probability, if their HSAVs were about 2.75 or higher.

FIGURE 4. **Median Within-Group Probabilities of 2.5 or Higher First-Year GPA, Using ACT Composite Score and HSAV**



Hispanic students

Caucasian American students

Table 6 includes the logistic regression statistics for the ACT Composite score, HSAV, and joint ACT Composite/HSAV models, reflecting the effect of imposing the optimal total group cutoff for each institution on Hispanic and Caucasian American applicants (i.e., using the within-group probabilities and associated estimated accuracy rates and other validity statistics). The results were then summarized across institutions.

TABLE 6

Distributions, Across Institutions, of Within-Group Regression Statistics for Hispanic and Caucasian American Students Using Total Group Optimal Cutoffs (25 institutions)

		Probability at total group cutoff		Est. accuracy rate		Est. increase in accuracy rate		Est. success rate		% Admitted	
Predictor	Group	Med.	Min./ max.	Med.	Min./ max.	Med.	Min./ max.	Med.	Min./ max.	Med.	Min./ max.
ACT Comp.	Cauc. Am.	.52	.48/ .56	.67	.59/ .84	.04	-.00/ .23	.68	.59/ .85	77	31/ 100
	Hispanic	.48	.20/ .64	.63	.53/ .75	.07	-.00/ .43	.59	.37/ .78	57	8/ 98
HSAV	Cauc. Am.	.51	.50/ .70	.70	.62/ .83	.09	-.00/ .26	.73	.65/ .85	68	24/ 96
	Hispanic	.42	.27/ .60	.66	.56/ .79	.15	.01/ .42	.63	.45/ .79	59	16/ 97
ACT Comp. & HSAV	Cauc. Am.	.50	.28/ .58	.72	.64/ .84	.12	.01/ .29	.73	.65/ .84	67	31/ 97
	Hispanic	.41	.12/ .60	.68	.59/ .83	.21	.02/ .47	.64	.48/ .85	55	14/ 90

As shown in Table 6, the differences between groups in median within-group probabilities of success associated with the total-group optimal cutoffs were smallest for the ACT Composite model (.52 vs. .48) and largest for the HSAV model (.51 vs. .42). The joint model did not reduce the difference between groups in median probability found for the HSAV model. For all three models, however, median ARs and SRs were lower for Hispanic students than for Caucasian American students. In contrast, median ΔARs were higher for Hispanic students than for Caucasian American

students for all three models (difference in medians of .03 to .11). Differences between groups in the median percentage of students who would be admitted ranged from 9% to 20%, with the HSAV model having the smaller difference and the ACT Composite model having the larger difference. The joint model slightly increased the difference in median percentage over that found for the HSAV model.

Contribution of Other Variables

Other variables were evaluated on their impact on between-group differences in the median percentages of students who would be admitted. Total-group cutoffs were imposed on the within-group regression models and the associated statistics were calculated. Selected results using the joint model as the base model are reported here for the two samples; other results are available from the author. The joint model provided a reasonable compromise between the ACT Composite and HSAV models in terms of higher accuracy (relative to the HSAV model) and higher median percentages of students who would be admitted (relative to the ACT Composite model).

African American/Caucasian American Sample. Of the three-, four-, and five-predictor models that were evaluated, only five models reduced between-group differences in the percentage of students who would be admitted. These results are shown in Table 7. The results for the base model (ACT Composite and HSAV joint model) are reported for comparison purposes. The logistic regression statistics reflect the effect of imposing the optimal total group cutoffs for each institution on African American and Caucasian American applicants (i.e., using the within-group probabilities and associated estimated accuracy rates and other validity statistics).

TABLE 7

Distributions, Across Institutions, of Within-Group Regression Statistics for African American and Caucasian American Students Using Total Group Optimal Cutoffs and Additional Predictor Variables

Predictor variable	Group	Probability at total group cutoff		Est. accuracy rate		Est. increase in accuracy rate		Est. success rate		% Admitted	
		Med.	Min./ max.	Med.	Min./ max.	Med.	Min./ max.	Med.	Min./ max.	Med.	Min./ max.
ACT Comp. & HSAV	Cauc. Am.	.49	.43/.59	.71	.63/.83	.14	.01/.36	.73	.66/.87	55	36/89
	Afr. Am.	.37	.14/.57	.74	.65/.86	.45	.10/.65	.58	.44/.78	24	7/67
ACT Comp. & HSAV & expected coll. GPA	Cauc. Am.	.49	.39/.60	.71	.63/.85	.15	.01/.35	.73	.65/.87	54	36/91
	Afr. Am.	.32	.04/.48	.75	.65/.86	.45	.10/.65	.58	.43/.76	26	7/65
ACT Comp. & HSAV & no. hs math courses taken	Cauc. Am.	.49	.39/.54	.71	.65/.85	.15	.02/.37	.73	.68/.86	55	36/94
	Afr. Am.	.30	.14/.55	.75	.65/.86	.45	.07/.65	.58	.46/.79	25	8/69
ACT Comp. & HSAV & total hs extracurricular activ.	Cauc. Am.	.49	.43/.58	.71	.63/.84	.15	.01/.36	.73	.65/.88	55	36/90
	Afr. Am.	.33	.09/.59	.75	.64/.87	.45	.10/.65	.59	.42/.77	25	7/65
ACT Comp. & HSAV & leadership accomplishment	Cauc. Am.	.49	.40/.54	.71	.63/.83	.15	.02/.36	.73	.65/.86	55	36/91
	Afr. Am.	.33	.11/.53	.74	.64/.87	.44	.09/.65	.58	.41/.77	26	8/66
ACT Comp. & HSAV & evaluation of high school	Cauc. Am.	.49	.40/.55	.71	.64/.84	.15	.01/.36	.73	.66/.87	55	36/90
	Afr. Am.	.34	.11/.58	.75	.63/.88	.45	.11/.64	.58	.46/.77	25	7/63

Of the five models reported here, the joint ACT Composite score, HSAV, and expected college GPA model resulted in the smallest difference between groups in the median percentage of students who would be admitted (difference of 28%), but this result was not substantively different from that found for the ACT Composite/HSAV joint model (difference of 31%). The median percentage of African American students who would be admitted was increased from 24% to 26%. However, the addition of expected college GPA also reduced African American students' median probability of success at the total-group cutoff from .37 to .32. This decrease did not affect median ARs, median ΔARs, or SRs, however.

Hispanic/Caucasian American Sample. Of the three-, four-, and five-predictor models that were evaluated, only one model reduced between-group differences in the median percentage of students who would be admitted. This model included ACT Composite score, HSAV, expected college GPA, and whether the student said he/she needed help with math skills. Adding expected college GPA and needs for help with math skills only reduced the between-group difference in the median percentage of students who would be admitted from 12% to 11%, however. Moreover, it also decreased the median percentages admitted for both Hispanic and Caucasian American students.

Conclusions

The African American and Hispanic students in this study had lower average high school averages and ACT Composite scores than did the Caucasian American students. These students also had lower first-year college GPAs than Caucasian American students. As a result, if admission decisions were based on either test scores or high school averages, and if race/ethnicity were not considered, smaller percentages of African American applicants and Hispanic applicants than

Caucasian American applicants would be admitted to college. *This result is true of both test scores and high school averages.*

African-American or Hispanic students with a given ACT Composite score or high school average have slightly lower college GPAs than Caucasian-American students with the same score or average. Therefore, in order to achieve the same average college performance across these racial/ethnic groups, admissions criteria would need to be *more* restrictive for these groups than for Caucasian American students. In particular, racial/ethnic differences in probabilities of success based on ACT Composite score were much smaller than those based on high school average. These findings are corroborated in other research on differential prediction and admissions test scores (Breland, 1979; J. Crouse, personal communication, 9/19/00; Noble, Crouse, & Schulz, 1996; Pennock-Roman, 1988; 1990; Sawyer, 1985).

If institutions chose to use one admissions standard for all students (i.e., a total-group cutoff), African American and Hispanic students would, in fact, be *advantaged*, compared to using group-specific standards. Their required probability of success would be lower than that of Caucasian American students, and thus would be less likely to be successful in college.

The results of this study showed that ACT Composite scores or high school average were somewhat more accurate predictors of first-year outcomes for African American students than for Caucasian American students. In contrast, prior research has shown less prediction accuracy for African American students than for Caucasian American students, based on test scores alone or joint use of test scores and high school grades (e.g., *ACT Assessment Technical Manual*, p. 58-59; Maxey & Sawyer, 1981). However, both of the prior studies were based on restricted samples of enrolled students; the samples could have been affected by differential admissions practices across racial/ethnic groups.

Both test score and high school average were somewhat less accurate predictors for Hispanic students than for Caucasian American students. This finding is consistent with prior research (Maxey & Sawyer, 1981; Pennock-Roman, 1988). Pennock-Roman (1990) found inconsistent results, which she attributed to range restriction in the data. She also found high school average to be a less accurate predictor of college GPA than test scores for some institutions, but found the opposite for others.

For most models and groups, using the joint ACT Composite/high school average model resulted in more accurate admissions decisions and reduced differences between racial/ethnic groups in probabilities of success and success rates, compared to the single-predictor models. By using both test scores and high school average jointly, a compensatory approach in setting and using admissions cutoff scores can be used without any loss in accuracy while maintaining high percentages of students who would be successful. Students with lower high school averages who might otherwise not be admitted to college would be admitted if their ACT scores were high enough, and vice versa.

Other variables (e.g., expected college GPA, high school course work taken) had little effect on differences between groups in the percentages of students who would be admitted, over and above test scores and high school averages. This does not imply that additional variables are of little value in the admissions process, however. Many of the variables used in this study were moderately to highly correlated with achievement (e.g., higher-achieving students take more mathematics and science courses in high school), and so added little information to the regression model, over and above test scores and high school grades. Moreover, it is likely that other student information, not collected in the ACT Assessment, would be of value in the admissions process (e.g., reasons for enrolling in the institution, personal goals, long-term career goals, etc.).

Implications

Postsecondary institutions are in a quandary. Diversity in student populations is an important part of their mission, but in order to achieve it, some institutions have different admissions standards for different groups. The U. S. Supreme Court may provide resolution of the legal issues associated with using race/ethnicity in making admissions decisions. Aside from the legal issues, however, institutions need to consider the educational consequences of their admissions decisions. In establishing different admissions standards for different groups, institutions may also require different levels of educational achievement upon entry. By admitting students who are less likely to be successful, institutions may need to provide supplemental programs (e.g., remedial instruction) to support these students, in order for them to have a successful college experience.

Moreover, using alternative approaches to college admissions (e.g., using high school rank) does not appear to be a universally viable solution, relative to including racial preference in admissions. This approach is not achieving the equivalent of race-based admissions in California and Florida (Cohen, 1998; McWhorter, 2001): The percentages of African American and Hispanic students admitted to college remain below the percentages achieved before the laws changed.

By using both standardized test scores and high school grades in college admissions, institutions increase the likelihood of students' academic success and persistence in college. Moreover, it increases the likelihood of institutions' maintaining campus diversity beyond the freshman year.

References

ACT (1997). *ACT Assessment technical manual*. Iowa City, IA: Author.

ACT (1997). *ACT Class Profile Service*. Iowa City, IA: Author.

ACT (1997). *ACT Prediction Research Services*. Iowa City, IA: Author.

ACT (1998). *College student profiles*. Iowa City, IA: Author.

Breland, H. (1979). *Population validity and college entrance measures*. Princeton, NJ: College Board Publication Orders.

Cloud, J. (1997). What does SAT stand for? *Time*, pp. 54-55.

Cohen, A. (1998). Back to square one. *Time*, pp. 30-31.

Cortez, A. (1997). Criteria for diversity: THECB's advisory committee suggests new criteria. *IDRA Newsletter*, pp. 3-5.

Cross, T. & Slater, R. B. (1997). Why the end of affirmative action would exclude all but a very few blacks from America's leading universities and graduate schools. *Journal of Blacks in Higher Education*, 17, pp. 8-17.

Donlon, T. F. (1984). *The college board technical handbook for the Scholastic Aptitude Test and Achievement Tests*. New York: College Entrance Examination Board.

D'Souza, D. (1995). The failure of 'cruel compassion'. *The Chronicle of Higher Education*, pp. B1-2.

Hebel, S. 1999. Minority students sue Berkeley, charging bias in admissions. *The Chronicle of Higher Education*, pp. A37.

Krauthammer, C. (1998). Lies, damn lies, and racial statistics. *Time*, pp. 32.

Lavergne, G. M. & Walker, B. (2001). Academic performance and persistence of top 10% and non-top 10% students: Academic years 1996-2000. (HB588 Report No. 4). http://www.utexas.edu/student/research/reports/admissions/HB588-Report4.pdf.

Linn, R. L. (1978). Single-group validity, differential validity, and differential prediction. *Journal of Educational Measurement*, *21*(1), 33-47.

Linn, R. L. (1982). Ability testing: Individual differences, prediction, and differential prediction. In A. K. Wigdor & W. R. Garner (Eds.), *Ability testing: Uses consequences, and controversies; Part II* (pp. 335-388). Washington, DC: National Academy Press.

Marklein, M. B. (2000). GPA jumps to head of class. *USA Today*, p 10D.

Maxey, E. J. & Sawyer, R. L. (1981). *Predictive validity of the ACT Assessment for Afro-American/Black, Mexican-American/Chicano, and Caucasian-American/White students.* (ACT Research Bulletin # 81-1). Iowa City, IA: ACT.

McWhorter, J. H. (2001). Eliminating the SAT could derail the progress of minority students. *The Chronicle of Higher Education*, p. B11.

Noble, J. P., Crouse, J., & Schulz; E. M. (1996). *Differential prediction/impact in course placement for ethnic and gender groups.* (ACT Research Report No. 96-8). Iowa City, IA: ACT.

Orfield, G. & Miller, E. (1998). *Chilling admissions: The affirmative action crisis and the search for alternatives.* Cambridge, MA: Harvard Education Publishing Group.

Pennock-Roman, M. (1988). *The status of research on the Scholastic Aptitude Test (SAT) and Hispanic students in postsecondary education.* (ETS Research Report No. 88-36). Princeton, NJ: Educational Testing Service.

Pennock-Roman, M. (1990). *Test validity and language background.* New York, NY: The College Board.

Sawyer, R. L. (1985). *Using demographic information in predicting college freshman grades.* ACT Research Report No. 87). Iowa City, IA: ACT.

Sawyer, R. L. (1996). Decision theory models for validating course placement tests. *Journal of Educational Measurement, 33,* 271-290.

Sawyer, R. L., Laing, J., & Houston, W. M. (1988). *Accuracy of self-reported high school courses and grades of college-bound students.* (ACT Research Report No. 88-1). Iowa City, IA: ACT.

Schmidt, P. (1998). U. of Michigan prepares to defend admissions policy in court. *The Chronicle of Higher Education*, pp. A32-34,

Schmidt; P. (1999). Minority students win right to intervene in lawsuit attacking affirmative action. *The Chronicle of Higher Education*, pp. A68.

Selingo, J. (2000). What states aren't saying about the 'X-Percent Solution'. *The Chronicle of Higher Education*, pp. A31-33.

Stewart, D. M. (1998). Why Hispanic students need to the take the SAT. *The Chronicle of Higher Education*, pp. A48.

St. John, E. P., Simmons, A. B. & Musoba, G. D. (1999). Merit-aware admissions in public universities: Increasing diversity. *Policy Bulletin.* Indiana Education Policy Center, pp. 1-8.

Zwick, R. (1999). Backdoor affirmative action. *Education week*, pp. 56, 35.

U.S. Department of Education
Office of Educational Research and Improvement (OERI)
National Library of Education (NLE)
Educational Resources Information Center (ERIC)

NOTICE

Reproduction Basis

[X] This document is covered by a signed "Reproduction Release (Blanket)" form (on file within the ERIC system), encompassing all or classes of documents from its source organization and, therefore, does not require a "Specific Document" Release form.

[ ] This document is Federally-funded, or carries its own permission to reproduce, or is otherwise in the public domain and, therefore, may be reproduced by ERIC without a signed Reproduction Release form (either "Specific Document" or "Blanket").